



Safety & Wellbeing Policy Arrangement

Section 16 – Electricity in the Workplace

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Arrangement Section 16 – Electricity in the Workplace

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Arrangement Section 16 – Electricity in the Workplace

1. Introduction

This document has been produced to consider the requirements of the Electricity at Work Regulations 1989, which elaborate and reinforce general duties imposed by the Health and Safety at Work etc. Act.

All electrical systems must, so far as reasonably practicable, be designed, constructed and maintained so as to prevent damage.

North Lanarkshire Council intends, so far as is reasonably practicable, to protect employees and others from the risks associated with electricity as outlined in the Electricity at Work Regulations 1989 (EAWR). All reasonable steps will be taken by the Council to secure the health and safety of employees who use, operate or maintain electrical equipment.

Where a problem arises related to electricity at work, employees must inform their manager or supervisor immediately who will then take the necessary measures to investigate the problem.

The responsibility for implementing the requirements of this arrangement and the preparation of a directorate specific interpretation rests with each Assistant Chief Executive.

2. Working Practice

Almost all employees of the Council interact with electrical systems on a daily basis. The consequences of an accident involving electricity can be very serious and for that reason we all need to exercise care and attention when using electrical items.

Employees will use a variety of extension cables, computers, display screens, sound systems, power tools, office equipment and other similar items of equipment. In any event it is important that all employees are capable of using their work equipment safely and have knowledge of the steps needed to keep all around them safe. GD22 - Safe use of electrical extension cables provides more detail on the safe use of extension cables and each manager will be able to generate guidance on the safe use of the electrical equipment used within each workplace.

3. Work on Live Systems

- 3.1 Live working **must not** be considered a normal practice and must be avoided unless absolutely necessary.
- 3.2 Work on or near live conductors is only permitted if all three of the following conditions are met, and a suitable site-specific risk assessment has been undertaken:
 - i) It is unreasonable in all circumstances for the system to be dead
 - ii) It is reasonable in all circumstances for the work to be carried out live
 - iii) Suitable precautions must be taken, i.e.

- a "permit to work" is required before working live. (A typical permit format is attached at Appendix 1)
- only competent persons are authorised to carry out live working
- the use of special tools, rubber mats and gloves
- the presence of another authorised person who understands the activity and who is able to handle an emergency (e.g. remove the victim from further danger, administer emergency first aid)
- the erection of safety barriers to keep unauthorised persons away.

Note: the use of any "permit to work" system must be accompanied by appropriate information, instruction, training and supervision. Records of training must be kept. The issuer of such a permit must be independent to the work being carried out.

4. Work on Isolated Systems

- 4.1 Where work has to be carried out on conductors and apparatus which has been energised at low voltage or can be energised by means of normal switching then the conductors or apparatus should be isolated or made dead. A "permit to work" should be issued prior to any work being undertaken on the apparatus.
- 4.2 Adequate precautions should be taken to prevent any conductor or apparatus from being accidentally or inadvertently electrically energised when people are working on them. Where it is possible, controlling switches should be locked in the 'OFF' position, and the person working on the circuit should keep the key.
- 4.3 In addition, where fuses protect a circuit, the fuses should be removed and kept in a safe place, preferably with the person who is carrying out the work.
- 4.4 Where it is not possible to lock the switch 'OFF', then other precautions must be taken to prevent the switch being inadvertently closed. This could take the form of the switch handle or switchgear door being securely tied or locked.
- 4.5 With any method of isolation it is necessary to fix, at the point of isolation, a notice giving warning that persons are working on the circuit. This Notice must be securely fixed so that it cannot be accidentally displaced. Notices must comply with the Health and Safety (Signs and Signals) Regulations 1996.

5. Competence to prevent danger or injury

- 5.1 The regulations require people working with electricity to be trained to a level that will prevent danger and injury. Accordingly no employee/ contractor will engage in any electrical work activity where the lack of technical knowledge or experience will result in danger or injury, unless they are undergoing training with adequate supervision.
- 5.2 Competency in this sense includes:
 - adequate knowledge of electricity and electrical systems;
 - adequate training and experience in electrical work;

- adequate understanding of the systems and practical experience of that class of system;
- understanding of the hazards and other precautions e.g. emergency first aid;
- ability to recognise at all times whether it is safe to continue work or whether additional technical knowledge or support is required.

6. Electrical Switchrooms

- 6.1 All electrical switchrooms must be clearly marked and must remain locked at all times.
- 6.2 An electrical switchroom is deemed to be the room that receives electrical power for the building.
- 6.3 Electrical switchrooms must only be used for this purpose and not be used, for example, as storerooms. Clear access and egress must always be maintained at all times.
- 6.4 Only authorised personnel must be allowed in the switchrooms.

Note: It is known that a number of other rooms contain small distribution boards etc. Whilst these are not considered switchrooms, sensible use of these rooms is expected as determined via risk assessment.

7. Testing of Electrical Systems

- 7.1 Procedures must be established for the regular testing and inspection of portable and transportable electrical equipment. This regime must be extended to items of equipment brought from home, by employees, for use in the workplace. Specific guidance on the portable appliance testing is given in Appendix 2.
- 7.2 Each individual user of the equipment must be made aware of the tests that must be carried out before they use the equipment and the measures that need to be taken to correct a fault. More detailed guidance can be obtained from GD9 – Electrical Testing or Portable Equipment and Fixed Systems and IS46 - Electrical Inspection and Testing
- 7.3 Similar testing and inspection must also be carried out on fixed electrical installations to permit compliance with the current standards. A programme of testing for fixed electrical systems is managed via Property and Procurement.

8. Information, Instruction and Training

Employees must be provided with the relevant information, instruction and training to understand the safety procedures for working on electrical systems and/or equipment. Information on electricity at work must be incorporated into existing and new training courses where appropriate, e.g. emergency first aid training, health and safety induction.

9. Records that may be required

- 9.1 Inspections and tests of the following (detailing date tested, name of tester and date of next test) plus details of any modifications or repairs made to:
- fixed electrical installations
 - portable and transportable electrical equipment
 - personal protective equipment
 - visual inspections of any electrical system
- 9.2 Instruments and test equipment used for electrical work.
- 9.3 Matters relevant to personal competence and training in respect of persons who carry out, supervise, manage or assess electrical work.
- 9.4 Copies of any 'permit to work' issued for work on electrical equipment.
- 9.5 Contractors safety information
- 9.6 Safety information provided to contractors.

10. High Voltage Equipment (above 240v)

No work must be undertaken on high voltage equipment without the immediate knowledge and consent of an Electrical Engineer. A permit to work must be issued before any work is undertaken on high voltage apparatus.



Permit to Work on Electrical Equipment

1) Issue

To.....in charge of the proposed electrical work.
I hereby declare that the following apparatus in the area specified is dead#, isolated from all live conductors and is connected to earth:

.....

Treat all other Apparatus and Areas as Dangerous

The apparatus is efficiently connected to EARTH at the following points:

.....

The points of isolation are:.....

CAUTION NOTICES have been posted at the following points:

.....

SAFETY LOCKS have been fitted at the following points:

.....

The following work is to be carried out:

.....

Signed.....Time.....Date.....

2) Receipt

I accept responsibility for carrying out the work on the apparatus detailed on this permit-to-work and no attempt will be made by me or by people under my charge to work on any other apparatus or in any other area.

Signed.....Time.....Date.....

Note: After signing the receipt, this permit-to-work should be retained by the person in charge at the place where the work is being carried out until work is complete and the clearance section is signed.

3) Clearance

The work for which this permit-to-work was issued is now suspended* / completed* and all people under my charge have been withdrawn and warned that it is no longer safe to work on the apparatus detailed on this permit. All gear and tools have been removed and additional earths have been removed. *Delete words as necessary

The work is complete* / incomplete* as follows:

.....

Signed.....Time.....Date.....

4) Cancellation

This permit-to-work is cancelled.

Signed.....Time.....Date.....

Unless live work is being undertaken.

In the event of live work, particular attention must be paid to risk control and competence assessments.

Portable Electrical Appliance Testing and Inspection (further guidance)

Introduction

The Electricity at Work Regulations 1989 (EAW) place requirements on employers to control risks which can arise from the use of electricity. This document will give information and guidance on how to achieve the safety objectives relating to portable electrical appliances.

1. Definitions

Hazard - anything that has the potential to cause harm if things go wrong.

Risk - the chance (big or small) of harm being realised when things go wrong.

Portable and Transportable - equipment which is not part of a fixed installation but is, or is intended to be, connected to a fixed installation, or a generator, by means of a flexible cable and either a plug and socket or a spur box, or similar means. It includes equipment that is either hand held or hand operated while connected to the supply, or is to be moved while connected to the supply.

P.A.T – Portable Appliance Testing. This is the process of formally testing and inspecting portable/transportable equipment

NOTE: The word portable is used subsequently to mean both portable and transportable.

2. Controlling the Risks

Nearly a quarter of all reportable electrical accidents involve portable equipment. A major cause of these accidents is failure to maintain the equipment. The likelihood of accidents occurring and their severity will vary, depending on the type of electrical equipment, the way in which it is used, and the environment in which it is used.

High risk result when other electrical equipment such as drills and portable grinders are used in a harsh and sometimes wet environment such as at a construction site, where there is a high probability of mechanical damage resulting in danger. Lower risks result from floor cleaners or kettles which are generally used in a more benign environment, e.g. offices and hotels, but can be subject to intensive use and wear. This can eventually lead to faults that can also result in a shock, burns or fire.

Such risks arising from the use of portable electrical equipment need to be assessed. The risks can be managed and controlled by setting up an appropriate inspection and maintenance system. This maintenance system should be designed to be proactive, i.e. planned to prevent incidents arising, rather than reactive where action is taken following an incident/accident. The measures taken should be appropriate to the risk. Procedures will have to be carried out more frequently where the risk is high, e.g. on construction sites, and less frequently where the risk is lower, e.g. in offices.

Much 'unauthorised' equipment is brought to work by employees, e.g. electric heaters, kettles, coffee percolators, and electric fans. Use of such equipment should be discouraged, however if there is good reason to use such equipment, then it must be controlled and it must be included in the maintenance & inspection regime. It would normally be expected that this would include a full portable appliance test, however where outside agencies are using portable equipment on North Lanarkshire Council circuits, provision of testing evidence would normally be acceptable.

There are no standard intervals required between visual inspections and combined inspections and tests; every situation has to be considered in relation to the combination of the type of equipment, its use and its environment. Heads of Service may therefore choose intervals that they consider to be appropriate. Further advice can be obtained from the departmental health and safety professionals or from the Health and Safety Section of Personnel Services.

3. Use of Equipment

The reason for distinguishing between portable equipment and fixed equipment is that the electrical connections to portable equipment (e.g. the plug and flexible cable and its terminations) are likely to be subjected to, and more vulnerable to, physical damage and wear or harsh treatment, when in use, than is equipment which forms part of the fixed installation. The fixed installation is usually provided with a significant degree of protection against damage by the fabric of the building or fixed enclosure.

Equipment which is held by hand or handled when switched on will present a greater risk because, if it does develop a dangerous fault, then the person holding it will almost certainly receive an electric shock.

4. Maintenance

Maintenance is a general term that in practice can include visual inspection, testing, repair and replacement. Maintenance will determine whether (a) equipment is fully serviceable or (b) remedial action is necessary.

Cost-effective maintenance of portable electric equipment can be achieved by a combination of actions applied at three levels:

- a) checks by the user;
- b) visual inspections by a person appointed to do this;
- c) combined inspection **and tests** by a competent person or by a contractor (commonly known as the PA test).

This should be followed up by management monitoring the effectiveness of the system, and action should be taken where faults are found, particularly where detected fault levels or types of faults are found repeatedly.

5. User Checks (Visual)

The person using the equipment should be encouraged to look critically at the electrical equipment they use and, after a minimum of basic training, visually check for signs that the equipment is not in sound condition, for example;

- there is damage (apart from light scuffing) to the cable sheath;
- the plug is damaged, for example the casing is cracking or the pins are bent;
- there are inadequate joints, including taped joints in the cable;
- the outer sheath of the cable is not effectively secured where it enters the plug or the equipment. Obvious evidence would be if the coloured insulation of the internal cable cores were showing;
- the equipment has been subjected to conditions for which it is not suitable,
- e.g. it is wet or excessively contaminated;
- there is damage to the external casing of the equipment or there are some loose parts or screws;
- there is evidence of overheating (burn marks or discoloration).

These checks also apply to extension leads and associated plugs and sockets. The user should undertake checks when the equipment is taken into use and during use. Any faults should be reported to heads of service and the equipment taken out of use immediately. Heads of Service should take effective steps to ensure that the equipment is not used again until repaired by a person competent to carry out the task.

6. Formal Visual Inspections

The majority of potentially dangerous faults can be picked up by formal visual inspection. These can control the risks and monitor the user checks, a competent person should carry out regular visual inspections (for example when undertaking inventory checks) which include visual checks similar to those in section 6 but undertaken in a more formal, systematic and recorded manner. Additional checks could include;

- removal of plug cover and a check made that a fuse is being used (e.g. it is not a piece of wire, a nail etc.);
- the cord grip is effective;
- the cable terminations are secure and correct, including an earth where appropriate;
- there is no sign of internal damage, overheating or ingress of liquid or foreign matter;
- The test sticker is “in date”.

The formal visual inspection should not include taking the equipment apart. This should be confined, where necessary, to the combined inspection and testing.

The competent person can normally be a member of staff who has sufficient information and knowledge, following appropriate training on what to look for and what is acceptable, and who has been given the task of carrying out the inspection. To avoid danger, competent persons should know when the limit of their knowledge and experience has been reached.

Faulty equipment should be taken out of service, labelled, quarantined and not used again until properly repaired. If necessary, it should be tested.

The pattern of faults found can be used by Heads of Service to indicate whether;

- the right equipment is being selected for the job;
- further protection may be necessary in a harsh environment;
- the equipment is being misused
- in order to enable remedial action to be taken.

7. Combined Inspection and Testing

The checks and inspections outlined above will, if carried out properly, reveal most (but not all) potentially dangerous faults. However, some deterioration of the cable, its terminals and the equipment itself can be expected after significant use. Additionally, equipment may be misused or abused to the extent that it may give rise to danger. Periodic inspection and testing are the only reliable way of detecting such faults, and should be carried out to back up the inspection regime. Services should establish and publish their own testing timescales agreed in conjunction with the Council Health and Safety Officer.

Such combined inspection and testing should be carried out by someone with a wider degree of competence than that required for inspection alone, however this can be often be carried out by a competent employee. It is expected that each item of equipment tested be appropriately labelled to include the next test date.

NOTE - If needed further advice/information can be obtained from the Safety & Wellbeing Team email healthandsafety@northlan.gov.uk

8. Maintenance and Test Records

A suitable log is useful as a management tool for monitoring and reviewing the effectiveness of the maintenance scheme and indeed to demonstrate that a scheme exists. It can also be used as an inventory of portable electrical equipment and a check on the use of unauthorised equipment (e.g. domestic kettles or electric heaters brought to work by employees).

Heads of Service with large amounts of equipment will find it useful to label equipment to indicate that the equipment has been tested satisfactorily, i.e. has been passed as safe, and when the date for the next test is due. Otherwise individual items may be missed on consecutive occasions.

See checklist 2 for sample record sheet for visual inspection of equipment.

The record sheet contains the four main areas looked at during a visual inspection;

- Plug/Fuse - ensure plug is in good condition, pins are not bent etc. ensure correct fuse is in use;
- Wire - ensure wires are not exposed, cables do not have tape around them;
- Casing - ensure casing is not cracked, pins are secure;
- Mechanical - are any moving parts accessible, are all parts working effectively.

Checklist 1- Checklist for P.A.T. Compliance

Use this to check whether you are managing the risks from portable electrical equipment. You need to:

- a) have a system of maintenance for portable (and transportable) electrical equipment;
- b) have identified the portable electrical equipment that needs to be maintained and obtained information on where it is used and how. Decide what to do about 'unauthorised equipment' brought in by employees;
- c) have provided straightforward training and information for all users (including yourself) to help them carry out user checks;
- d) set up a formal visual inspection system;
- e) give the job to and train someone to carry this out;
- f) consider brief written guidance relating to the visual inspection, what to look for and procedures to follow when faults are found (and when unauthorised equipment is in use);
- g) decide on the appropriate frequency for formal visual inspection. (If records of visual inspections are kept, the findings can be reviewed and the records used to check whether these inspections can be carried out less frequently or need to be carried out more frequently);
- h) find someone to test equipment that;
 - i. is suspected of being defective (but this cannot be determined by visual examination), has been repaired or modified;
 - ii. is due for a combined inspection test (or has never had one at the start of a maintenance regime).
- i) ensure that the person has sufficient knowledge, training and experience as well as access to further information and advice where necessary;
- j) decide on appropriate frequency for testing where this is necessary;
- k) review records of test results and use to check whether tests need to be carried out less frequently or perhaps more frequently;
- l) monitor all the arrangements and ensure that follow-up action is carried out including a review of frequency of formal visual inspection.

Checklist 2 – Sample record sheet for formal visual inspection

Item description	Plug/Fuse	Wire	Casing	Mechanical	Initials & date
	Observation	Observation	Observation	Observation	
E.g. Kettle main office ID 1234	Cover loose Screw tightened	OK	OK	OK	AB 1/02/13

Example criteria:

- Wire - ensure wires are not exposed, cables do not have tape around them;
- Plug & Fuse - ensure plug is in good condition, pins are not bent etc. ensure correct fuse is in use;
- Casing- ensure casing is not cracked, pins are secure;
- Mechanical- are any moving parts accessible, are all parts working

Electricity at Work - Information for Employees

Introduction

This information sheet aims to provide you with information on electrical safety at work. It would be unusual for any employee not to make daily use of electrical equipment.

Major Hazards associated with electrical equipment.

Shock & Burns - Caused by physical contact with live parts either by direct contact with the body, or via other conducting materials e.g. ladders.

Fire Caused by overheating of electrical apparatus.

Guidance for use of Electrical Equipment

Check

Read and understand the operating manual for the equipment before use.

Check leads and plugs on portable equipment.

If damaged or broken do not use.

Test

A regime for the regular testing of all portable, transportable and fixed electrical equipment should be in place. If you are aware that an item has not been tested, report the matter to your supervisor who will take the necessary action.

Practical Advice

Avoid the use of extension leads, although where use cannot be avoided, manage their use to avoid tripping risks.

Do not use equipment brought from home, or that has been donated, until it has been subject to a formal inspection and test in accordance with departmental guidance.

Do not overload circuits with multiway adapters.

Electrical equipment should be kept in well-ventilated conditions.

Do not remove plugs by pulling on the cable, for example; do not carry equipment by its cable.

Do not place items over the ventilation holes on Visual Display Units.

Report defects immediately.

Use 110-volt portable electric tools (Transformers may be necessary).

Do not use electrical equipment outdoors or in hazardous conditions unless constructed for that purpose and adequately protected.

Do not use machines, tools beyond their capacity.

Make use of a Residual Current Device (RCD) whenever possible.

DO NOT MAKE Adjustments or repairs to any equipment unless authorised to do so.

If you are in any doubt about the safety of any electrical item, do not use it. Switch it off, if safe to do so and seek professional advice.

Impact Assessments

Document Title: Health and Safety Policy
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Environmental Impact Assessment: This document has been assessed for significant environmental impact; no detrimental impact has been identified.

Equality Impact Assessment: This document has been assessed for significant equality implications; no significant issues have been identified.

General Comments: This document is the arrangement section relating to the management of potential hazardous activities linked to work with electrical systems and is associated with the Council's health and safety policy required by the Health and Safety at Work Act 1974. The general aim of the council is to ensure a healthy and safe working environment for all persons working for, or make use of, Council Services. Nothing in the document serves to have any negative impact on either equality issues or the environment. In general, associated documents will encourage positive consideration of both these areas to ensure all members of the workforce and community are afforded access, so far as is reasonably practicable, to the same opportunities for a healthy and safe workplace as well as a sustainable environment.